

ABSTRACT OF THE DISCLOSURE

Free-living microbes are provided in which the nucleic acid has been modified so that the microbe is attenuated for proliferation and/or which comprise genetic mutations that attenuate the ability of the microbe to repair its nucleic acid. Methods of using the modified microbes for the loading, activation, and/or maturation of antigen-presenting cells are also provided. Vaccine compositions comprising the modified microbes and/or the antigen-presenting cells and methods of using the vaccines are also provided. The microbes may be further modified to include heterologous antigens, such as tumor antigens or infectious disease antigens, for use as a vaccine against cancer or infectious diseases.